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ABSTRACT

This manual designed for grade 2 is part of a series for a program to integrate the teaching and learning of mathematical and computer concepts and skills in the elementary school. The manual contains 34 lessons. Each lesson includes information on the topic, suggested grade level, mathematics concepts and skills, objective, prerequisite skills needed, and activities. Topics contained in the lessons include: (1) problem solving; (2) geometry; (3) numbers; (4) measurement; (5) number concepts; (6) addition; (7) time; (8) patterns; and (9) making inferences and drawing conclusions. Software programs used for the activities are specified for each lesson. (KR)

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Mathematics / Computer Integrated Curriculum Grade 2

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How can Integrated Computer Curriculum be used in Elementary School (and can I do it?)

by: Michelle Murray-Hurst

Upon entering the last decade of the 20th century-- we are continuing to move forward into the age of technology. Computers of some types have been around since the 1940's and have been used in the school setting since the 1960's. But, are we using the computers effectively and if so, are we integrating them into the regular curriculum? Educators seem to be aware of the need for computer instruction in the middle and upper grades but often it is thought that computers in the lower elementary grades are only for drill, practice, and games. WRONG!! These young children are very interested in computers and are capable of solving some complex problems. Many times students find that grasping concepts is easier using the computer rather than the traditional methods of instruction. Because children are unique and have different learning styles it seems important to provide as many learning opportunities as possible. The computer allows increased methods by providing visual, tactile, and some times auditory responses.

But, let's face the problem, computers are an important part of instruction at all grade levels but the most important fact is to use them on a primary level. Elementary education is the perfect place to begin a strong base of computers because of these students' hunger for knowledge. Mathematics conveniently lends itself to the integration of the computer. It can be done and is being done today. Integration may take a little extra time and effort but the rewards could be bountiful. The mathematics

curriculum is relatively simple and all of the objectives may be taught or enriched by using the computer.

Now is the time that educators realize that computers are our friends and want to make our lives easier. It is our responsibility to allow our children to grow up with computer knowledge and not be afraid to experience new technological advances.

Integration of computers into the curriculum is here today and is something that can be easily expanded through ingenuity and creativity. Many curriculum documents to assist teachers in making this transition have been developed. This document was designed for kindergarten through sixth grade and the lessons can be presented by teachers with very little computer experience. So we recognize that integration can be easily done.

Computer Lesson #_2.1___

Topic: Pre-Computer Activity

Suggested Grade Level: 2nd

Mathematical Essential Element: none

Descriptor: none

Objective: none

Content Description: To familiarize students with LOGO Commands

Prerequisite Student Skills: Review: FD; LT; BK; PU; PD; HOME; CS.

Activities: Materials: Students
Prepared Cards
Prizes

Have 1 student be the turtle.

Other students draw cards + instruct the turtle accordingly.

ex. Cards may say FD 10 steps, LT, BK, PU, PD, HOME, CS.

Play until all cards are drawn.

Shuffle + have another student be the turtle.

Prizes will be awarded to all who participate.

Instructional Resource: Terrapin LOGO activity

Computer Lesson #_2.2____

Topic: Problem Solving

Suggested Grade Level: 2nd

Mathematical Essential Element: 1

Descriptor: 1.2

Objective: Analyzing problems by identifying relationships, discriminating relevant from irrelevant information, sequencing, observing patterns, and questioning.

Content Description: Students will learn to sequence and observe patterns by using "The Factory".

Prerequisite Student Skills: Direction following skills.

Activities: 1. Load " The Factory"

2. Press "#3" for Make a Product [Press Return]
3. Select EASY [Press Return]
4. Return
5. Select which operation [punch-rotate-stripe] to do
6. Some objects will require multiple operations
7. After completion press Return
8. Press Return ["no" should be highlighted]
9. Select option
10. Repeat 1-9 if needed

If this is too easy, progress up in difficulty

Instructional Resource: Apple Computer; "The Factory"

Computer Lesson #_2.3____

Topic: Problem Solving

Suggested Grade Level: 2nd

Mathematical Essential Element: 1

Descriptor: 1.3

Objective: making inferences and predictions including identification of cause/effect, identification of point of view, and generalization of results

---

Content Description: Identifying and extending a pattern of objects using a computer.

Prerequisite Student Skills: Ability to locate points on a grid (use work-sheet 27 "Making a Bumble Picture")

Activities:1. Using Bumble Dots from the Bumble Games, build a model using ordered pairs.

2. Join the dots by naming the number pair for each one.

3. In number pair, such as 2,5, the 2 means go right 2 places and the 5 means go up 5.

4. Choose the model you wish to copy.

5. Construct pattern chosen on the grid using numbered pairs.

Instructional Resource: Bumble Games (The Learning Company)

Grades: Kindergarten - 5th

Computer Lesson #_2.4____

Topic: PROBLEM SOLVING

Suggested Grade Level: 2

Mathematical Essential Element: 1

Descriptor: 1.5

Objective: demonstrating creative thinking through fluency, flexibility, elaboration, creation of new ideas, and spontaneity

---

Content Description: Demonstrating creative thinking through fluency, flexability, elaboration, creation of new ideas and sponteniety

Prerequisite Student Skills: graphing plots (simple)

Activities: using "Bumble Dots" on the Bumble Games disks, students will create their own picture using creativity program:

Load disk.

Press 6 for bumble dots.

Press 2 for make your own.

Draw picture using coordinates.

*Student must draw picture with continuous line in mind (maximum 10 dots)

Instructional Resource: Apple computer - Bumble Games disk

Computer Lesson #_2..5____

Topic: Problem Solving

Suggested Grade Level: 2nd

Mathematical Essential Element: 1

Descriptor: 1.6

Objective: estimating outcomes including appropriate units for outcomes

---

Content Description: estimating outcomes including appropriations units for outcomes

Prerequisite Student Skills: Plotting fractions on grids

Activities: Students will estimate the outcome of plotting the fractions on a grid. They will name the object.

Students will recieve a piece of grid paper each.

The teacher will call out fractions.

Students will then plot on the grid.

*Do Not Exceed 10ths. Make Equals always!!

Teacher can use Bumble Games to have students draw geometric figures. These can be done with Bumbles Dots (Make your Own) which is found in Bumble Games (The Learning Company)

Instructional Resource: Grid Paper: Bumble Games (The Learning Company)

Computer Lesson #_2.6____

Topic: Problem Solving

Suggested Grade Level: 2nd

Mathematical Essential Element: 1

Descriptor: 1.3

Objective: making inferences and predictions including identification of cause/effect, identification of point of view, and generalization of results

---

Content Description: Identifying and extending a pattern of objects using a computer.

Prerequisite Student Skills: Ability to locate points on a grid (use work-sheet 27 "Making a Bumble Picture")

Activities:1. Using Bumble Dots from the Bumble Games, build a model using ordered pairs.

2. Join the dots by naming the number pair for each one.

3. In number pair, such as 2,5, the 2 means go right 2 places and the 5 means go up 5.

4. Choose the model you wish to copy.

5. Construct pattern chosen on the grid using numbered pairs.

Instructional Resource: Bumble Games (The Learning Company)

Grades: Kindergarten - 5th

Computer Lesson #__2.65___

Topic: Problem Solving

Suggested Grade Level: 2nd

Mathematical Essential Element: 1

Descriptor: 1.8

Objective: Selecting appropriate materials and methods for solution such as concrete manipulatives, mental computation, paper and pencil, calculator, or computer

---

Content Description: Students will choose the appropriate machine for the job.

Prerequisite Student Skills: none

Activities:1. Load "The Factory"

2. Choose "#2"--Build A Factory
3. [Teacher will now give instructions]

* * * * * *

Teacher Instructions:

Teacher may choose their choice of machines and verbally give the instructions to the student to listen for. I.E.:

TEACHER: I want you to punch for me, in your machines, two square holes and one circle.

STUDENT: should respond by choosing the appropriate two punching machines in a row.

It is recommended that the teacher start off giving only two to three machines (preferably punch and stripe). The teacher may then progress to harder instructions.

EXTENSION

The teacher may want to extend this by having students pair off and

design options for the other student to make. The software will allow for this option. Be sure that the students understand that they are to start off with easy machines and then progress to harder and more difficult levels.

Instructional Resource: The Factory; Apple II

Computer Lesson #_2.7____

Topic: PROBLEM SOLVING

Suggested Grade Level: 2

Mathematical Essential Element: 1

Descriptor: 1.9

Objective: reflecting on the problem-solution process and solution of a problem by evaluating outcomes for reasonableness (including appropriateness of units), making revisions as needed, describing and discussing the process and solution, and making a decision based on the solution

---

Content Description: students will use software to problem solve the particular problem presented.

Prerequisite Student Skills: knowledge of plots; following directions

Activities: students using Bumble Games "visit from space" students will analyze where the "friend" is by solving the problem students will evaluate their answers and problem solve by correcting wrong guesses.

program: load "Bumble Games"
press "4" for visit from space
press "y" for instructions
read instructions
follow on screen directions

Instructional Resource: Apple computer, Bumble Games

Computer Lesson #_2.8____

Topic: Problem Solving

Suggested Grade Level: 2nd

Mathematical Essential Element: 1

Descriptor: 1.10

Objective: Generating and extending problems

Content Description: Students will generate a problem using "The Factory"

Prerequisite Student Skills: Direction following skill; knowledge of "The Factory"

Activities: 1. Load "The Factory"

2. Press #2 for Build a Machine [return]
3. Select machine to operate [punch-stripe-rotate]

OPTIONS IN "THE FACTORY"

A. Punch
   a. Square
      1. one punch
      2. two punches
      3. three punches
   b. Circle
      1. one punch
      2. two punches
      3. three punches

B. Rotate
   1. 45 degrees
   2. 90 degrees
   3. 135 degrees

4. 180 degrees

C. Stripe

1. thin
2. medium
3. thick

**Limit machines to 3 or 4 in the beginning.

Instructional Resource: Apple computer; "The Factory"

Computer Lesson #_2.9____

Topic: Patterns,Relations,and Functions

Suggested Grade Level: 2nd

Mathematical Essential Element: 2.1

Descriptor: 2.1

Objective: identifying and extending patterns of objects and symbols, using a calculator or computer where appropriate

---

Content Description: Use of models and patterns to develop the concept of relations and functions.

Prerequisite Student Skills: Ability to recognize and predict correct sequencing.

Activities: 1. Load the computer program for "Gertrude's Puzzles".

2. Choose " The Network Puzzles" from suggested games.
3. Follow instructions given.
4. Student must place the correct shape in the correct location in the 6 or 9 box network puzzle.
5. When the puzzle is correctly solved, the walls of the puzzle room flash and Gerturde flies in with a treasure.

Instructional Resource: Gertrude's Puzzles; The Learning Company

Computer Lesson #_2.10____

Topic: PATTERNS

Suggested Grade Level: 2

Mathematical Essential Element: 2

Descriptor: 2.1

Objective: identifying and extending patterns of objects and symbols, using a calculator or computer where appropriate

---

Content Description: identify and extend patterns of objects and symbols

Prerequisite Student Skills: LOGO command repeat

Activities: Students will learn that a star is made up of geometric shapes.

Program: REPEAT 5[FD 99 RT 144] (star program)

ask students to count triangles(8)

ask students to count pentagons(1)

ask students to count quadrilaterals(8)

* teacher may change size of stars by increasing "FD" number

Instructional Resource: LOGO; Apple computer

Computer Lesson #_2.11____

Topic: Locating points on a number line

Suggested Grade Level: 2nd

Mathematical Essential Element: 2

Descriptor: 2.3

Objective: identifying the use of patterns as a problem-solving strategy

---

Content Description: To locate points on a number line of counting numbers by using the Bumble Games.

Prerequisite Student Skills: The students should be able to count and order numbers.

Activities: 1. Load computer disk with "Bumble Games".

2. Press "1" for "Find Your Number".
3. Press "Y" for instructions.
4. Read instructions (teacher reads if necessary).
5. Press "Return" to continue.
6. One or two player option is offered.
7. Press "0-5" to find number.
8. Follow directions of arrow.
9. Options of "Yes or No" to continue are provided.

Instructional Resource: Bumble Games Packet; Apple computer

Computer Lesson #2.12_____

Topic: Number Line

Suggested Grade Level: 2nd

Mathematical Essential Element: 2

Descriptor:2.3

Objective: identifying the use of patterns as a problem-solving strategy

---

Content Description: To construct a non-numbered number line

Prerequisite Student Skills: LOGO commands "FD + BK"

Activities: Using LOGO and number Flash Cards, students will recognize number concept through a simple race. Student (s) shall construct the dotted number line. Next the Flash Cards will be mixed and one will be drawn. The student will use the turtle to move Forward that many spaces. Use the backup command to return to the original starting point. Remember the PU command !

```
PROGRAM: ST
         PD
         RT 90
         Repeat *10[ FD**12 PU FD 12 PD]
         PU
         PU
         Home
         RT 90          Backup: Home; RT 90; PU
```

*Some teachers may want to have the turtle start on the left side, then count across. To do this, have Pen Up and move: LT 90

FD until desired position

RT 180

Instructional Resource: LOGO; Apple II; Flash Card numbere

Computer Lesson #__2.13

Topic: Constructing ordered pairs using "Find the Bumble"

Suggested Grade Level: 2

Mathematical Essential Element: 2

Descriptor: 2.5

Objective: constructing a set of ordered pairs by pairing members of two sets of concrete objects according to a given rule

---

Content Description: Constructing a set of ordered pairs by pairing members of 2 sets of concrete objects according to a given rule.

Prerequisite Student Skills: Worksheet 11(resource book) to review x,y in hunting for objects.

Activities: Find Bumble by using ordered pairs (a letter represents x and a number represents y). Read clues and follow instructions to narrow down Bumble's hiding place.

Instructional Resource: Bumble Games, The Learning Company

Computer Lesson #_2-14___

Topic:Tic -Tac -Toe

Suggested Grade Level: 2

Mathematical Essential Element: 2

Descriptor: 2.5

Objective: constructing a set of ordered pairs by pairing members of two sets of concrete objects according to a given rule

---

Content Description: students will learn about ordered pairs by using the software "Bumble Games"

Prerequisite Student Skills: worksheets 23-26 (resource book)

Activities:Two player game Tic-Tac-Toe

Students take turns choosing an ordered pair which is then represented on a graph. The first player to get 4 pairs in a row vertically, horizontally, or diagonally wins. Extend by having student(s) allow cat to win.

Instructional Resource: Bumble Game, The Learning Company

Computer Lesson #_2.15___

Topic: Greater than; less than (> + <)

Suggested Grade Level: 2nd

Mathematical Essential Element: 3

Descriptor: 3.1

Objective: Compare the perimeters of two quadrilaterals to determine greater or less than

---

Content Description:

Prerequisite Student Skills: Vocabulary (quadrilateral, perimeter, finding perimeter using Sunburst Geometric pre-Supposer)

Activities: Perform computer lesson on perimeter

Type in scale change after you make and measure the quadrilateral.

Compare the perimeter of your first quadrilateral with your second quadrilateral

Which is greater?

Which is less?

Instructional Resource: Geometric pre-Supposer (Sunburst Communications)

Computer Lesson #_2.16___

Topic: GREATER THAN , LESS THAN

Suggested Grade Level: 2

Mathematical Essential Element: 3

Descriptor: 3.1

Objective: writing a number sentence to compare numbers, including different names for the same numbers (e.g. , 8>5, 2<3, 1+3=4)

Content Description: Compare 2 #'s indicating greater than and less than

Prerequisite Student Skills: knowledge of #'s 0-10

Activities: worksheet #7 "draw the jumps". Review # lines and prepares user for find your #. Choose and # and follow directions greater or less than.

Instructional Resource: BUMBLE GAME, THE LEARNING COMPANY

Computer Lesson #__2.17___

Topic: FRACTIONS

Suggested Grade Level: 2

Mathematical Essential Element: 3

Descriptor: 3.6

Objective: illustrating fractional parts of whole objects or sets of objects (halves, thirds, fourths, sixths)

Content Description: Parts of a whole using fractions

Prerequisite Student Skills: Terrapin Logo commands

Activities:

FD 50
RT 90
FD 100
RT 90
FD 50
RT 90
FD 100
RT 90

You now have a rectangle.

FD 50 RT 90 FD 50 RT 90 FD 50

This divides the rectangle in half showing 2 equal parts

RT 90
FD 50
RT 90
FD 25
RT 90
FD 100

This divides the shape into 4 equal parts.

Instructional Resource: LOGO; Apple computer

Computer Lesson #_2.18____

Topic: Ordinal Numbers and Skip Counting by 50's

Suggested Grade Level: 2

Mathematical Essential Element: 3

Descriptor:3.9

Objective: using ordinals tharough twentieth

Content Description: State ordinal number to describe position of given object.

Prerequisite Student Skills: Prepared transparency,Terrapin Logo ,ordinal numbers, and skip counting by 50's.

Activities:

LT 90

FD 130

RT 180

Turtle now on heart in first position. Go forward by 50's using the FD 50 command. Stop at sun. What ordinal position are you in? (3rd)

FD 100 you are now in the fifth position. What picture do you see? (fish)

Continue FD 50,

BK 50 to review ordinal positions and skip counting by 50's

Instructional Resource: LOGO; Apple computer

Computer Lesson #_2.19__

Topic: Using the number line find addition combinations

Suggested Grade Level: 2nd

Mathematical Essential Element: 4

Descriptor: 4.1

Objective: making generalizations about order and grouping, and identifying patterns in addition and subtraction

---

Content Description: Using a number line drawn on an overlay and E-Z LOGO, command the turtle arrow to go to specific points.

Prerequisite Student Skills: The student should be able to add and order numbers.

Activities: Using a number line drawn on an overlay and E-Z LOGO, command the turtle arrow to go to 3. Press the F key to get the turtle to make a line starting from the zero on the number line. Now walk the robot down three more points. The student can see that by adding the two addends 3 and 3 that the total will be 6. Have the student return the turtle to zero and make two different stops before ending up on six. The result should be two different addends. Other combinations should be 2 + 4; 1 + 5; 0 + 6; 6 + 0. The student should use the number line to practice all the combinations to 10 and 18.

Instructional Resource: LOGO ; Apple computer Text: Learning with LOGO: APPLE and C-64; Ch. I, p. 20

Computer Lesson #_2.20____

Topic: Measurement

Suggested Grade Level: 2

Mathematical Essential Element: 5

Descriptor: 5.1

Objective: estimating length and using measuring instruments to measure the length, width, and height of objects using inch, foot, yard, centimeter, decimeter, and meter

---

Content Description: Compare two objects with respect to length.

Prerequisite Student Skills: EZ and Terrapin Logo commands, knowledge of greater than and less than.

Activities:Using a prepared transparency, have students draw lines greater or less in length than the lines given. (teacher evaluated) May also use partners without transparency. Partner I draws a line. (example: fd 50) Partner 2 draws a line of greater distance. (example: pu home pd fd 75 This may be self evaluated.) Extend with paper and pencil task. Record moves (example 50,75) and add the <,>,= signs to write a math sentence.

Instructional Resource: EZ and Terrapin Logo

Computer Lesson #_2.21____

Topic: Measurement

Suggested Grade Level: 2nd

Mathematical Essential Element: 5

Descriptor: 5.1

Objective: Estimating length and using measuring instruments to measure the length, width and height

---

Content Description:

Prerequisite Student Skills: Introductions of units of measure (centimeters, inches)

Activities: Measure Bumble- Worksheet 9

(for use with Find Your Number)

1. Use centimeter, inch ruler to measure Bumble
2. Record the answers in centimeters and inches
3. Move on to measure objects in the classroom using centimeters and inches.

Instructional Resource: Bumble Games (The Learning Company)

Computer Lesson #_2.22___

Topic: Measurement

Suggested Grade Level: 2

Mathematical Essential Element: 5

Descriptor: 5.1

Objective: estimating length and using measuring instruments to measure the length, width, and height of objects using inch, foot, yard, centimeter, decimeter, and meter

---

Content Description: Compare two objects with respect to length.

Prerequisite Student Skills: EZ and Terrapin Logo commands, knowledge of greater than and less than.

Activities:Using a prepared transparency, have students draw lines greater or less in length than the lines given. (teacher evaluated) May also use partners without transparency. Partner I draws a line. (example: fd 50) Partner 2 draws a line of greater distance. (example: pu home pd fd 75 This may be self evaluated.) Extend with paper and pencil task. Record moves (example 50,75) and add the <,>,= signs to write a math sentence.

Instructional Resource: EZ and Terrapin Logo

Computer Lesson #2.23____

Topic: Telling Time

Suggested Grade Level: 2

Mathematical Essential Element: 5

Descriptor: 5.5

Objective: telling time to the nearest hour on traditional clocks and identifying minutes past the hour

---

Content Description: Telling time to the quarter hour.

Prerequisite Student Skills:EZ Logo commands . Minute hand to the quarter hour.

Activities: Make transparency by marking on a clear acetate overlay the position of the turtle in HOME position. Draw a circle (approximately 4" in diameter around this point. Your transparency is now complete and ready to use. Secure transparency on the computer monitor with tape. Students will use EZ Logo commands to go forward 4 to represent minute hand at the hour. Continue as follows:

B4
R3
F4 (this represents a quarter past the hour)
B4
R3
F4 (this represents half past the hour)
B4
R3
F4 (this represents 45 minutes past the hour)
B4
R3

F4 (back to hour position)

Extend this lesson by drawing what the minute hand would look like at 2:30, etc...

Computer Lesson #_2.24___

Topic: Counting, Time, Shapes

Suggested Grade Level: 2

Mathematical Essential Element: 5

Descriptor: 5.5

Objective: telling time to the nearest hour on traditional clocks and identifying minutes past the hour

---

Content Description: Relate math concepts to literature.

Prerequisite Student Skills: Counting, shape recognition, telling time

Activities: Read MAGGIE B. by Irene Haas

Turn to page 2 What time is it on the clock? This is Maggie's bedtime. What is your bedtime? What time will it be in 2 hours?

Turn to page 4 Count the people. Count the animals. Count the trees.

Turn to page 5 How many shapes can you find? What shape is the plate?(circle) Whate shape is the ball?(sphere)

See James' counting lesson. Write the number words one-ten.

Instructional Resource: BOOK: MAGGIE B. by: Irene Haas

Computer Lesson #_2.25___

Topic: Square - Geometry

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6-1

Objective: describing and comparing two-dimensional shapes

Content Description: To construct a square using LOGO and the "repeat" command

Prerequisite Student Skills: LOGO "repeat" command

Activities: Using Logo, students will "draw" a square by using "repeat"

Program: ST
PD
Repeat 90[FD 25 RT 90]

* Students mastering the square, can alter the size of the square by changing the FD # only.

** Students who master both the circle and square- let them experiment with 1. Square- Angles (RT #)
2. Circle- Sizes (FD # + RT #)

Instructional Resource: LOGO ; Apple II computer

Computer Lesson #_2.26____

Topic: Triangle- Geometry

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6.1

Objective: describing and comparing two-dimensional shapes

Content Description: To construct a triangle using Terrapin LOGO

Prerequisite Student Skills: recognition of geometric shapes

Activities: 1. Using LOGO; students will construct a triangle, students will identify the unique shape by description.

```
PROGRAM: ST
         PD
         LT 90
         FD 30
         RT 135
         FD 30
         RT 90
         FD 30
         RT 135
         FD 30  (should complete a triangle)
```

Students may vary size by changing "FD" number, greater or smaller

---

Instructional Resource: Terrapin LOGO; Apple computer

Computer Lesson #_2.27____

Topic: Drawing basic two dimensional shapes on the computer

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6.1

Objective: describing and comparing two-dimensional shapes

Content Description: Using Terrapin LOGO make two dimensional shapes; circle, square, rectangle, triangle.

Prerequisite Student Skills: Being able to identify and describe each shape.

Activities: To construct a square: (longer way)

```
FD 50 RT 90
FD 50 RT 90
FD 50 RT 90
FD 50 RT 90
(Home CS- clear screen)
To Square (shorter way)
 Repeat 4[FD 50 RT 90]
```

To construct a rectangle:

```
FD 40 RT 90      (long way)
FD 80 RT 90
FD 40 RT 90
FD 80 RT 90
(Home CS- clear screen)
```

Repeat 2[PD FD 40 RT 90 FD 80 RT 90] (shorter way)

To construct a circle:

FD 2 RT 2 (long way)

FD 2 RT 2

(repeat two steps until circle is closed)

Repeat 360 [FD 1 RT 1] (shorter way)

To construct a triangle:

RT 120 FD 75 (longer way)

RT 120 FD 75

RT 120 FD 75

Repeat 3[FD 75 RT 120] (shorter way)

Instructional Resource: Terrapin LOGO; Apple computer;

TEXT: Learning With LOGO; p. Ch. 1, p. 10

Computer Lesson #__2.28___

Topic: Circle- Geometric Shapes

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6.1

Objective: describing and comparing two-dimensional shapes

Content Description: To construct a circle using Terrapin LOGO

Prerequisite Student Skills: recognition of geometric shapes

Activities: Using LOGO students will construct a circle, using single step repetiveness.

PROGRAM:

```
ST
PD
FD 40
RT 40
FD 40
RT 40 ----extend with repeat commands until closed.
```

Larger circles are possible by changing the "#" on the FD and RT commands. NOTE: numbers must be the same!!

Instructional Resource: Terrapin LOGO; Apple computer

Computer Lesson #__2.29___

Topic: Recognize and name two-dimensional figure (square)

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6.1

Objective: describing and compatring two-dimensional shapes

Content Description: To construct a square using the EZ LOGO software on the computer.

Prerequisite Student Skills: Ability to recongnize basic shapes

Activities: 1. Before going to the computer, teacher will direct students to make the shapes by stepping out the shapes. EX. for a square, go 3 floor tile right, 3 down, 3 left, and 3 up and the square is made.

2. On the computer the square can be made by given the following commands:

F3
R3
F3
R3
F3
R3
F3

Instructional Resource: TEXT: Learning With LOGO; Apple II

Computer Lesson #_2.30____

Topic: Rectangle- Geometry (pre-activity)

Suggested Grade Level: 1st and up
Mathematical Essential Element: 6
Descriptor: 6.1
Objective: describing and compatring two-dimensional shapes

Content Description: To construct a rectangle with yarn walking through computer LOGO commands. (This is a a pre-activity to using EZ LOGO)

Prerequisite Student Skills: Straight Line; recognition of a rectangle (opposite sides are equal).

Activities: Programming activity. The students will choose a partner and take turns being the robot and commander. There will be two points that we refer to as START and END. Two people will hold signs- standing in position on the floor tiles (START and END sign). Yarn will be made to show the design made. The following commands will be given:

F4
R90
F8
R90
F4
R90
F8

Instructional Resource: TEXT: Learning With LOGO; Apple II

Computer Lesson #_2.31____

Topic: Symmetry with High Resolution Graphics

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6.3

Objective: identifying two-dimensional shapes

Content Description: Two figures are produced on the computer screen to be used for comparison - one figure showing symmetry (two parts that match) and one figure showing non-symmetry (two parts that don't match).

Prerequisite Student Skills: The students should be familiar with high resolution graphics and have plotted their own initials and/or basic shapes.

Activities: The following commands can be typed in and demonstrated by the teacher or given as directives to the students:

Type : 10 HGR
Type : 20 HCOLOR
Type : 30 HPLOT 60,45 TO 55,50
" " 40 HPLOT 55,50 TO 55,55
" " 50 HPLOT 55,55 TO 65,65
" " 60 HPLOT 65,65 TO 75,55
" " 70 HPLOT 75,55 TO 75,50
" " 80 HPLOT 75,50 TO 70,45
" " 90 HPLOT 70,45 TO 65,50
" " 100 HPLOT 65,50 TO 60,45

TYPE : 105 HPLOT 65,45 TO 65,70
" " 110 HPLOT 100,40 TO 110,40

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" " 115 HPLOT 110,40 TO 110,60
" " 120 HPLOT 110,60 TO 120,60
" " 125 HPLOT 129,60 TO 115,65
" " 130 HPLOT 115,65 TO 100,65
" " 135 HPLOT 100,65 TO 100,40
" " 140 HPLOT 105,35 TO 105,70
" " RUN
```

Computer Lesson #_2.32___

Topic: Perimeter

Suggested Grade Level: 2

Mathematical Essential Element: 6

Descriptor: 6.4

Objective: investigating perimeter using concrete models

Content Description: Investigating perimeter.

Prerequisite Student Skills: Vocabulary (quadrilateral, perimeter)

Activities: Load Sunburst Geometric Presupposer

Select N for new shape

Select 5 for quadrilateral

Select 4 for kite

Select M for measure

Select 2 for perimeter ABCD

Select + (use shift!)

Repeat or end with ESC.

Instructional Resource: Sunburst Geometric Presupposer

Computer Lesson #_2.33___

Topic: Measurement Concept

Suggested Grade Level: 2nd

Mathematical Essential Element: 6

Descriptor: 6.4

Objective: investigating perimeter using concrete models

Content Description: Extend the study of geometric figure (square) by finding its perimeter

Prerequisite Student Skills: Know right and left, add whole numbers

Activities:1. Construct a square using the EZ LOGO using the commands:

F3
R3
F3
R3
F3
R3
F3

2. After constructing the square, trace it from the computer to a transparency and measure the sides of the square with the cm. side of the ruler and add. You have found the perimeter of this square.

Instructional Resource: LOGO; Apple computer TEXT: Learning with LOGO; Apple + C-64; Ch. I, p. 10

Computer Lesson #_2.34___

Topic: Making inferences and drawing conclusions

Suggested Grade Level: 2nd

Mathematical Essential Element: 7

Descriptor: 7.5

Objective: making predictions based on graphed data

Content Description: This is a game that requires the students to plot points on a grid by going across and then down. The points should line up in straight in order to win.

Prerequisite Student Skills: Work Sheets 23-26 (resource)

Activities:The Tic Tac Toc game activity in the Bumble Games software package will facilitate the student to make inferences and predictions by having them plot their points (4) in a straight line in order to win the game. As the game progresses, they will be able to see cause/effect relationships as well as make generalizations. The students must plan certain strategies in order to beat their opponent. The will be able to see patterns and releationships.

Instructional Resource: LOGO: "Bumble Games" Software Package